

CLAIMS

1. A powder diffusing nozzle (2) for an electrostatic powder-coating device and which is intended to be positioned at the end of a spray gun (3), the nozzle (2) comprising a side wall (49) delimiting a passage extending the powder duct (8) of the gun (3) and an end wall (56) closing the duct (8) at its end, characterized in that at least one orifice (57) is made in the side wall (49) near the end wall (56) connecting the powder duct (8) to the outside of the nozzle (2), the axis (A1) of the orifice (57) making a determined angle (A) with the axis (A2) of the powder duct (8), and in that at least one deflector (58) is formed on the end wall of the nozzle (56) or on the side wall (49) near the end wall of the nozzle (56) to deflect the powder jet from the duct (8) along the axis (A1) of the orifice (57).
2. The diffusing nozzle (2) as claimed in claim 1, characterized in that at least one deflector (58) has, when viewed in section on a plane parallel to the plane containing the axis (A2) of the duct (8) and the axis (A1) of the orifice (57), a profile made up of a straight segment that, with the axis of duct (8), makes an angle more or less equal to the angle between the axis (A1) of the orifice (57) and the axis (A2) of the duct (8).
3. The diffusing nozzle (2) as claimed in claim 1, characterized in that at least one deflector (58) has, when viewed in section on a plane parallel to the plane containing the axis (A2) of the duct (8) and the axis (A1) of the orifice (57), a profile made of two straight segments, the angle of the first segment lying between a zero value and the value of the angle (A) between the axis (A1) of the orifice (57) and the axis (A2) of the duct (8), and the angle of the second

segment, closest to the orifice (57), with respect to the axis (A2) of the duct (8) being more or less equal to the angle (A) between the axis (A1) of the orifice (57) and the axis (A2) of the duct (8).

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4. The diffusing nozzle (2) as claimed in claim 1, characterized in that at least one deflector (58) has, when viewed in section on a plane parallel to the plane containing the axis (A2) of the duct (8) and the axis (A1) of the orifice (57), a profile forming a curve of increasing gradient, the angle of the tangent to the curve with respect to the axis (A2) of the duct (8) near the orifice (57) being more or less equal to the angle (A) between the axis (A1) of the orifice (57) and the axis (A1) of the duct (8).

5. The diffusing nozzle (2) as claimed in one of claims 1 to 4, characterized in that at least one deflector (58) has, when viewed in section on a plane perpendicular to the axis of the duct (8), a concave profile.

6. The diffusing nozzle (2) as claimed in one of claims 1 to 5, characterized in that at least one deflector (58) has, when viewed in section on a plane perpendicular to the axis of the duct (8), a straight profile.

7. The diffusing nozzle (2) as claimed in one of claims 1 to 6, characterized in that at least the terminal part (48) of the nozzle (2) comprising the orifice (57), the end wall (56) and the deflector (58) is mounted such that it can be orientated about the axis (A2) of the duct (8) on the end of a spray gun (3).

8. The diffusing nozzle (2) as claimed in one of claims 1 to 7, characterized in that at least the

terminal part (48) of the nozzle (2) comprising the orifice (57), the end wall (56) and the deflector (58) is fixed removably to the end of a spray gun (3).

5 9. The diffusing nozzle (2) as claimed in one of claims 1 to 8, characterized in that it comprises an ionization spike (26) for ionizing the jet of powder, this spike being positioned along the axis of the duct (8) and directed in the direction (J) of the jet of  
10 powder, the free end (60) of which is situated inside the duct (8) upstream of the end wall (56) in the direction (J) of the jet.

15 10. The diffusing nozzle (2) as claimed in one of claims 1 to 8, characterized in that it comprises an ionization spike (26) for ionizing the jet of powder, the free end (60) of which is situated near the end wall (56) of the nozzle (2) on the outside thereof.

20 11. The diffusing nozzle (2) as claimed in claim 10, characterized in that the ionization spike (26) for ionizing the jet of powder, positioned along the axis of the duct (8) and directed in the direction of the jet of powder, passes through the end wall (56) of the  
25 nozzle (2) via a passage (62) formed in the end wall (56) of the nozzle (2).

30 12. The diffusing nozzle (2) as claimed in one of claims 1 to 8, characterized in that it comprises an ionization spike (26) for ionizing the jet of powder, the free end (60) of which is situated near the orifice (57) and near the side wall (49), on the outside of the nozzle (2).

35 13. The diffusing nozzle (2) as claimed in claim 13, characterized in that the ionization spike (26) for ionizing the jet of powder, the base of which is positioned along the axis of the duct and directed in

the direction (J) of the jet of powder, passes through the end wall (56) of the nozzle (2) forming an elbow to reemerge via the side wall (48) of the nozzle (2) near the orifice (57) through a passage (62) formed in the  
5 end wall (56) and the side wall (49) of the nozzle (2).

14. The diffusing nozzle (2) as claimed in one of claims 1 to 13, characterized in that the angle (A) between the axis (A1) of the orifice (57) and the axis  
10 (A2) of the powder duct (8) is between  $10^{\circ}$  and  $90^{\circ}$ .

15. The diffusing nozzle (2) as claimed in claim 14, characterized in that the angle (A) between the axis (A1) of the orifice (57) and the axis (A2) of the  
15 powder duct (8) is between  $45^{\circ}$  and  $90^{\circ}$ .

16. The diffusing nozzle (2) as claimed in one of claims 1 to 15, characterized in that the orifice (57) is in the form of a slot directed transversely with  
20 respect to the axis (A2) of the powder duct (8).